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ABSTRACT

A study was undertaken to develop a valid, reliable measure of coping skills for use with hearing impaired adolescents. Subjects included 324 adolescents, aged 15 to 17 years. Through the permission of schools and parents and the cooperation of the Annual Survey of Hearing Impaired Children and Youth of the Center for Assessment and Demographic Studies, background information on the students was obtained. The Meadow-Kendall Social Emotional Inventory was completed, for each student, by two teachers who were familiar with the student. The new instrument, ACOPE, and a videotape stimulus for ACOPE were presented to the students; the instrument was presented in print, via videotape, and in Pidgin Sign English by a skilled signer. Subjects were tested in small groups in their classrooms. Subscale scores were computed based on the original factors generated by the authors of the scale; these included abilities related to ventilating feelings, seeking diversions, developing self-reliance, developing social support, solving family problems, avoiding problems, seeking spiritual support, investing in close friends, seeking professional support, engaging in demanding acts, being humorous, and relaxing. Results indicate that a valid, reliable measure of coping skills of hearing impaired adolescents could be developed. Five data tables are included. (TJH)

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PROGRESS REPORTS

Report #2 June, 1989

The Revision of an Instrument to Measure the Capacity of Hearing Impaired Adolescents to Cope

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RATIONALE

As the notion of the role of the school in preparing the hearing impaired student for functional adult participation in society has expanded, the responsibility of the school system has changed from providing basic literacy skills to ensuring that the hearing impaired individual has the tools to integrate with the larger society if he or she wishes to. Unfortunately, discussing the issue is complicated by the ambiguity of the topic and the resulting variety of its operational definitions. There has been relatively little consistency among the constructs used to define social or emotional competence within a school setting which would be related to adult functioning in society. As a result, there are considerable differences within the research literature in the measures used to assess social or emotional functioning and in the characteristics of the groups used to measure it.

A serious problem with discussing the social or emotional adjustment of hearing impaired school aged children is that a variety of constructs drawn from different disciplines have been used in the study of these children since the professional constituencies have defined different constructs as important. The issue is further complicated by confusions in constructs such as the difference between development and adjustment or static versus active definitions as well as inadequate information about "appropriate" or "normal" levels of behavior during adolescence. Related to this is the fact that personality during adolescence may not be stable, that is, it is quite capable of change either along a dimension of "normal development" or it may change as the result of a response to traumatic event. Consequently, the use of an inappropriate definition of social or emotional maturity is an easy fallacy of research which uses a "snapshot" of a point in the life of individuals as the index of maturity.

The possible definitions of social or emotional maturity within a schooling context that have been used in previous studies range from overt behavior in groups to internalized attitudes or personality traits. Social interaction or social standing is defined by outward physical behavior such as the frequency of contact between individuals or judgements about the social position of individuals based on their observed or reported patterns of interaction (Antia, 1982; Arnold and Tremblay, 1979; Brackett and Henniges, 1979; Elser, 1959; Kennedy and Bruiniks, 1974; Kennedy et al., 1976; Ladd, Munson and Miller, 1982; McCauley, Bruiniks and Kennedy, 1976). Social development has included constructs such as maturity or self-image which are seen as the social analog to physical development, that is, the concept that as an individual matures he or she has expectations for different relation ships with others (Loeb and Sarigiani, 1986; Warren and Hasenstab, 1986). Social attitudes include beliefs or feelings such as empathy, prejudice, or tolerance for ambiguity which condition the quality of a person's interactions with others (Brice, 1985; Murphy and Newlon, 1987). We will exclude aberrant or psychotic behavior to simplify our discus sion, but we recognize that this has also been used as a construct in the assessment of social or emotional maturity in hearing impaired adolescents (Kluwin, 1985).

Since individual researchers from a range of disciplines have looked at social and emotional issues in hearing impaired populations, we find a range of measures have been used. Peer nominations have been used as a device for assessing social standing either directly or as an index of the extent of social integration of hearing impaired students (Elser, 1959; Kennedy and Bruiniks, 1974; Kennedy et al., 1976). Direct observations have also been used as a method in assessing the degree of social integration of hearing impaired students (Antia, 1982; Arnold and Tremblay, 1979; Ladd, Munson and Miller, 1982; McCauley, Bruiniks and Kennedy, 1976). Finally, various types of self-completed inventories of self-esteem, self-image, or ambiguity tolerance have been used to measure the social attitudes of both the hearing and the hearing impaired toward each other (Brice, 1985; Loeb and Sarigiani, 1986; Murphy and Newlon, 1987; Warren and Hasenstab, 1986). All of these measures have theoretical or practical limitations in assessing

the social or emotional competence of hearing impaired students in a school setting. Sometimes, they have both types of limitations.

The limits of peer nomination scales are both conceptual and practical. The conceptual limitations are that peer regard is a transient construct, that it is an indirect measure of individual social or emotional competence, and is subject to specific group bias, e.g. my parents might be mad at me but my bowling team thinks I am wonderful. Theoretically, peer nomination systems suffer from Plato's criticism of fame as a form of immortality, that is, they are both fleeting and at the mercy of others' opinions. Further, it is not a direct measure of individual competence. We must make the strong assumption that because the individual is accepted or not accepted by a group at a point in time that that individual is socially or emotionally competent.

Live observations of overt social behavior are less troubled by theoretical problems in that they are a more direct measure of social competence, however, they are troubled by serious methodological limits. Specifically, any live observation system must establish the validity of its observational categories, must assure a relatively high degree of inter-observer reliability, and must be attentive to both the timing and duration of observations. The last limitation is possibly the most severe. Observations must be frequent enough and long enough to ensure that low level behaviors are sampled and sampled in proportion to their actual occurrence. The improvement of directly observed behavior is lost first to the problem of interpreting that behavior and second to assessing that it is adequately measured.

The solution to the frequency and duration of observation problem presented by a live observation system is partially solved by the use of self-report inventories. If one can be reasonably assured that respondents will be truthful, then the difficulty of obtaining information about low frequency events is resolved. The problem with most self-image or self-concept or other social attitude measures is that they view the emotional or social factor as fixed or relatively static, consequently, success or failure is evaluated in terms of a single instant in a person's life rather than in terms of their ability to deal with life's challenges.

An alternative to this limitation is to use a measure of coping strategies to assess social or emotional competence in schools for assessing social or emotional maturity in a school context. There are three reasons why coping is a more useful construct.

Coping is not a static construct; it offers the ability to predict success in future situa tions; and it can be contextually or situationally evaluated.

Coping strategies are not a static construct because an individual's strategies can change with experience or training. The individual's capacity to respond to the environment changes over time, and this can alter the definition of "successful" coping. The context itself can alter and redefine what appropriate behavior is.

A measure of a coping strategy should be predictive in the sense that if we know what resources an individual will be taking into a particular type of stressful situation, we should be able to predict the individual's probability of success in that situation.
The purpose of this study was to investigate whether a valid and reliable measure of coping skills could be developed for use with hearing impaired adolescents. The next step would be to see if the measure had any predictive power.

METHOD

Sample

Table 1 provides background information on the sample.

Table 1 Here.

Instrumentation

Annual Survey of Hearing Impaired Children and Youth. Through the permission of the schools and the parents and the cooperation of the Annual Survey of Hearing Impaired Children and Youth of the Center for Assessment and Demographic Studies,

back ground information on the students was obtained.

Meadow-Kendall Social Emotional Inventories. Two copies of the Meadow-Kendall Social Emotional inventory were sent to the schools for each of the youngsters in the study. The schools were asked to select the two teachers who were most familiar with the students and to have them fill out the forms. Teachers were paid five dollars for each completed form to compensate them for their time and effort.

There are two major types of reliability to be addressed in considering the Meadow-Kendall: internal consistency and rater reliability. To test the internal consistency of the scale, three Cronbach's alphas were computed: Social Adjustment =.949; Self Image=.906; Emotional Adjustment=.812. Because over 90 different individuals rated the students, it was not practical to compute a rater reliability figure, consequently, to adjust for rater differences, the mean of the two ratings was used as the best approximation of the true rating.

ACOPE.

Pilot Study. Prior to the large scale testing, two pilot tests, where the students read the test with help if they requested it, were conducted on students at two locations in California. It was noted with these 38 hearing impaired adolescents that less able readers had considerable difficulty with some of the language on some of the items. Consequently, a signed version of the inven tory was developed in order to reduce pos sible reading effects.

Main Study. Printed copies of the ACOPE and a copy of the videotape stimulus for the ACOPE were sent with a cover letter and return envelopes to each of the school systems. The instrument was presented to the students in print and on videotape simulta neously. A skilled signer presented the items of the inventory in Pidgin Sign English without voice to compensate for less able readers. A practice page was presented to the subjects before giving them the actual inventory.

Subjects were tested in small groups in their classrooms. A person familiar with the subjects passed out the practice pages, explained that it was a practice, and went through the practice page with the students. The individual items on the practice page were signed to the students by the test administrator.

The actual inventories were then dis tributed to the subjects. The purpose and directions for the test were explained to the students by the test administrator using manual communication. The videotape was run and students had time between the signing of each item in order to respond to the item. If a student had a problem, the tape was stopped, and the item was explained without hinting at a specific answer.

RESULTS

Subscale scores were computed based on the original factors generated by the authors of the scale.

Table 2 Here.

The following statements reduced the reliability of their individual subscales:

Developing Self-Reliance

40. Get a job or work harder at one

In the original scale this item had the lowest factor loading for this scale. For the average of the other items and for the responses to this item, about 10% of the respondents marked "Mostly" for this item. The greatest discrepancy between this item and the remainder of the scale was in the "Never" response. Averaged over the other five items in the scale, 11.4% of the respon dents selected "Never" while 39.2% of the respondents for this item selected "Never." The differences between the other item's average response rate and this item's response rate reflect the large discrepancy for this one response.

Avoiding Problems

8. Avoid home as much as possible

36. Tell yourself the problem is not important

In the development of this subscale, these

two items had no factor loadings on this subscale but were kept in for theoretical rather than psychometric reasons.

Relaxing

38. Think how things could be better.

In the original development of this subscale, this item had no factor loadings on this subscale but was kept in for conceptual reasons.

For the Avoiding Problems subscale and for the Relaxing subscale, the conscious decision on the part of the test maker to include those items in those scales results in lower reliabilities for this hearing impaired sample as well. For item 40 in the Developing Self-Reliance subscale, the option of looking for a job or working harder at a job does not load on that factor for hearing impaired students.

Validity. In an attempt to establish construct validity for the ACOPE, the sub scales of the ACOPE were correlated with the three subscales of the Meadow-Kendall. Because so many statistics were computed, the significance level was set at .01 to avoid spurious correlations. None of the correlations were statistically significant.

Given the generally poor reliability and concurrent validity for the twelve original ACOPE scales for what is a large and fairly representative sample of hearing impaired adolescents, it was decided to generate a more stable set of scores.

The authors computed a factor analysis limiting the number of factors to three because an inter-correlation matrix of the twelve subscale scores suggested a cluster of three factors and to increase the number of items for each factor. The results are presented in Table 3.

Table 3 Here.

From these three new factors, factor scores were computed. The factor scores are standardized with a mean of 0 and a standard deviation of 1. The concurrent validity of the new scales was established by correlating them with the Meadow-Kendall scales. Because several statistics were being computed on the same data base, we used .01 as the measure of statistical significance.

Table 4 Here.

The Meadow-Kendall, in general, was useful in establishing the concurrent vali dity of the new scales particularly for the "seeks diversions" scale. We would expect negative correlations between measures of problem avoidance and measures of maturity or adjustment. In these three comparisons, this was the case. We should expect to find negative correlations between measures of emotional maturity or social adjustment and the use of emotional outbursts as a coping strategy, however, these correlations were not statistically significant.

Coping patterns can be created by combining the scores of the three new scales. A cluster analysis yielded five primary groups and a number of outliers. The five primary profiles were:

1 Non-copers: These individuals were low on all of the measures.

2 Personal resource users: These individuals were high on the measure of utilizing personal resources but low on the other two scales.

3 Diversion/Emotion responders: These individuals were low on the measure of personal resources but high on the other two.

4 Personal/diversion seekers: These individuals were high on the use of personal resources and on seeking diversions.

5 Personal/emotional responders: These individuals were low on the diversion measure.

Table 5 presents descriptive information for each of the groups.

Table 5 Here.

To test whether or not the groups were different from each other on the three measures, a repeated measures analysis of

variance was computed. The F values for the groups was statistically significant ($F = 82.00$; $df = 3,243$; $p < .001$) as were the interaction between the groups and the tests ($F = 102.01$; $df = 6,120$; $p < .001$), thus establishing that the groups differed among themselves. In other words, the types are unique on the basis of the factor scores.

To test whether or not the groups differed on any of the demographic variables, a discriminant analysis was computed using gender, age, hearing loss, and ethnicity to predict group membership. The fifth group, personal emotional responders, were dropped from this analysis because of the cumulative effect of missing data. Actual cell sizes for the other four groups ranged from 30 to 46, but only three subjects had complete data for the fifth group. The most parsimonious discrimination of the group differences were two canonical discriminant functions with 99.79% of the variance accounted for. The first included ethnicity as the only discriminating variable and the second included age and gender as discriminators with age accounting for a larger portion of the variance. We can conclude from this that age and gender are discriminators among types of coping behavior, but we must suggest that since ethnicity can represent a number of socio-economic and family relation differ ences resulting from socio-economic differ ences that ethnicity may represent other factors as well.

IMPLICATIONS

This study established that a valid and reliable measure of the coping skills of hearing impaired adolescents could be developed. Construct validity was established through the factor loadings, which for the most part, were greater than the loadings for the test developer's factors. Concurrent validity was demonstrated if not completely established through the correlation of the test scores with the Meadow-Kendall results. Predictive validity has been suggested by the discriminant analysis which showed that the coping types were different on two variables that we would expect differences on, age and gender.

Hearing impaired adolescents would be expected to have different coping strategies for three reasons. First, given the communication problems inherent with a severe hearing loss, the individual does not have the facility necessarily to "talk it out" with individuals in power. Second, aggression in hearing impaired children is actively discouraged, possibly to the detriment of the distinction between aggressiveness and assertiveness. It is possible that more assertive or demanding coping strategies are not available to these children. Third, the fundamental life experience of the severely hearing impaired individual is different on a personal, social, and educational level from a hearing individual, consequently, it would be reasonable to expect considerable differences between the two populations in their patterns of how they cope with the world.

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Table 1
Demographic Information by Grade Cohort

	Youngest (N=91)	Middle (N=110)	Eldest (N=123)
Better Ear Average	80.63	87.05	86.11
	26.00	22.37	21.20
Age	15.04	16.15	17.12
	0.91	1.16	1.00
Ethnicity			
%White	51.0	49.6	42.9
%Black	27.9	33.0	31.3
%Hispanic	14.4	8.7	18.6
%Asian	6.7	8.7	7.2
Gender			
% Male	49.4	51.8	48.3
% Female	50.6	48.2	51.7
Age of Onset			
% Pre-lingual	90.6	91.1	87.8

Table 2
Reliability for the ACOPE

ACOPE Factor:	N	Mean	s.d.	alpha
Ventilating Feelings	336	16.235	4.561	.706
Seeking Diversions	333	22.267	5.773	.697
Developing Self-Reliance	323	17.176	3.900	.513
Developing Social Support	340	17.929	4.139	.623
Solving Family Problems	339	16.643	4.325	.678
Avoiding Problems	338	9.296	3.358	.597
Seeking Spiritual Support	340	6.500	2.865	.576
Investing in Close Friends	343	6.067	2.046	.431
Seeking Pro. Support	346	4.246	1.764	.410
Engaging in Demand. Acts	341	11.783	3.208	.593
Being Humorous	353	5.252	1.980	.421
Relaxing	337	11.427	3.151	.325

Table 3
Factor Loadings and Internal Consistency
(n=279)

Item		Factor Loading
Factor: Seeking personal solutions		
1	Do what your parents tell you	.476
4	Apologize to people	.449
13	Try to improve yourself	.536
15	Try to think of the good things	.442
18	Say nice things to people.	.573
25	Organize your life	.447
27	Work hard on schoolwork	.464
29	Try to be close with someone you like	.453
30	Try to help other people	.513
31	Talk to your mother	.568
39	Talk to a brother or a sister	.524
41	Do things with your family	.613
44	Pray	.429
45	Try to see the good things	.523
48	Sleep	.439
50	Talk to your father	.447
52	Talk to a friend	.430
	alpha = .828	
Factor: Seeking diversions		
11	Go shopping	.557
16	Try to be with a boyfriend or girlfriend	.580
17	Ride around in a car	.695
37	Go to a movie	.654
40	Work harder at your job	.521
46	Drink beer, wine, alcohol	.397
53	Play video games	.594
54	Do strenuous exercise	.469
	alpha = .734	
Factor: Emotional responses		
14	Cry	.445
19	Get angry and yell at people	.696
22	Complain to family members	.512
26	Swear	.597
28	Blame others for the problem	.599
49	Say mean things to people	.724
	alpha = .692	

Table 4
Intercorrelation Matrix of Meadow-Kendall and ACOPE scales

ACOPE	Meadow-Kendall Self Image	Social Adjustment	Emotional Maturity
Personal solutions	-.009	.089	-.064
Seeks diversions	-.220*	-.269*	-.184*
Emotional response	-.076	-.114	-.015

*p value <.01

Table 5
Characteristics of the Types

	Type 1 (n=63)	2 (n=63)	3 (n=88)	4 (n=52)	5 (n=15)
Personal solutions	-.827 .644	.813 .591	-.157 .670	.159 .751	1.186 .502
Seeks diversions	-.843 .530	-.383 .442	.510 .755	.820 .552	-1.028 .662
Emotional response	-.500 .552	-.308 .686	.777 .570	-1.019 .472	1.060 .570
Age	16.1 1.3	16.6 1.3	15.9 1.3	16.1 1.1	16.0 1.7
% male	54.2	61.4	51.1	29.4	66.7
white	57.5	34.1	71.0	39.1	00.0
Hearing Loss[1]	89.18 20.87	88.04 23.76	88.63 21.13	85.43 18.16	79.50 19.54

[1] Degree of loss as measured in decibels for the average of the better ear